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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/919,047	07/31/2001	Ramesh Nagarajan	14-11	4255

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EXAMINER	
CURS, NATHAN M	
ART UNIT	**PAPER NUMBER**
2613	

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/919,047	NAGARAJAN ET AL.	
	Examiner	Art Unit	
	Nathan Curs	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 6, 9-11, 17 and 18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 1, 6 and 9-11, the applicant's amended limitations of sending a connection setup message to a "plurality of next nodes before the cross-connect is complete" are not supported by the specification. Throughout the specification, and in the figures, the applicant only discloses sending a setup message to the next downstream "node" (singular) before the cross-connect is complete.

Regarding claims 11, 17 and 18, the applicant's amended limitations of a processor for performing a cross-connect with "one or more of the downstream nodes" are not supported by the specification. The specification does not disclose a single node's processor performing plural cross-connects with plural nodes downstream.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1, 3-7, 9-15, and 17-21 are rejected under 35 U.S.C. 102(a) as being anticipated by Wei et al. ("Just-in-time signaling for WDM optical burst switching networks"; Wei et al.; Journal of Lightwave Technology, Vol. 18, Issue 12, Dec 2000, Pages 2019-2037).

Regarding claim 1, Wei et al. disclose a method for use in a node of a network during a connection setup between a source node and a destination node, the method comprising the steps of: initiating a cross-connect with an adjacent node; sending a connection setup message, to a next node before the cross-connect is completed; and completing the cross-connect with the adjacent node without waiting for completion of any downstream cross-connects (page 2028, col. 2, line 15 to page 2029, col. 1, line 28).

Regarding claim 3, Wei et al. disclose the method according to claim 1, wherein the network is an optical transport network (page 2019, Abstract).

Regarding claim 4, Wei et al. disclose the method according to claim 3, wherein the cross-connect is selected from the group consisting of an electrical-based cross-connect and a transparent wavelength-based optical cross-connect (page 2021, col. 1, lines 26-48).

Regarding claim 5, Wei et al. disclose the method according to claim 1, wherein the connection setup is a wavelength-based connection setup (page 2021, col. 1, lines 26-48).

Regarding claim 6, Wei et al. disclose a method for use in a node of a network during a connection setup between a source node and a destination node, the connection setup comprising a forward pass of signaling messages from the source node to the destination node and a reverse pass of signaling messages from the destination node to the source node, the method comprising the steps of: initiating a cross-connect with an adjacent node on the forward pass of the connection setup; and sending a connection setup message to a next node before

the cross-connect is completed; and checking if the cross-connect was successful on the reverse pass of the connection setup (page 2028, col. 2, line 15 to page 2029, col. 1, line 28), where the SETUP signal initiates a cross-connect on the forward pass and the CONNECT signal, sent on the reverse pass, confirms the cross-connect was successful.

Regarding claim 7, Wei et al. disclose the method according to claim 6, wherein the forward pass and reverse pass of signaling messages occurs out-of-band (page 2019, col. 2, lines 2-8).

Regarding claim 9, Wei et al. disclose a method for use in a node of a network during a connection setup between a source node and a destination node, the method comprising the steps of: sending a connection setup message to a next node before a cross-connect is completed; and performing the cross-connect with a downstream node prior to receipt of a signaling message related to a status of at least one cross-connect operation performed at another downstream node (page 2028, col. 2, line 15 to page 2029, col. 1, line 28).

Regarding claim 10, Wei et al. disclose a method for use in a node of a network during a connection setup between a source node and a destination node, the method comprising the steps of: sending a connection setup message to a next node from an upstream node before a cross-connect at the upstream node is completed; and responsive to the received connection setup message, executing a cross-connect with a downstream node whereby a cross-connect at the downstream node is initiated (page 2028, col. 2, line 15 to page 2029, col. 1, line 28).

Regarding claim 11, Wei et al. disclose apparatus comprising: a communications interface for providing signaling to a downstream node and for receiving signaling from an upstream node; and a processor, responsive to receipt of a connection setup message sent from the upstream node before a cross-connect at the upstream node is completed, for performing a cross-connect with the downstream node prior to receipt of a signaling message

from the downstream node related to a status of at least other cross-connect operation related to the connection setup (page 2028, col. 2, line 15 to page 2029, col. 1, line 28), where the JIT signaling agent is a processor.

Regarding claim 12, Wei et al. disclose the apparatus according to claim 11, wherein the upstream node and the downstream nodes are in an optical transport network (page 2019, Abstract).

Regarding claim 13, Wei et al. disclose the apparatus according to claim 12, wherein the cross-connect is selected from the group consisting of an electrical-based cross-connect and a transparent wavelength-based optical cross-connect (page 2021, col. 1, lines 26-48).

Regarding claim 14, Wei et al. disclose the apparatus according to claim 11, wherein the connection setup is a wavelength-based connection setup (page 2021, col. 1, lines 26-48).

Regarding claim 15, Wei et al. disclose the apparatus according to claim 11, wherein the signaling occurs out-of-band (page 2019, col. 2, lines 2-8).

Regarding claim 17, Wei et al. disclose apparatus comprising: a communications interface for receiving signaling sent from an upstream node before a cross-connect at the upstream node is completed on a forward pass of a connection setup and receiving signaling from a downstream node on a reverse pass of the connection setup; and a processor for initiating a cross-connect with the downstream node on the forward pass, and for checking if the cross-connect was successful on the reverse pass (page 2028, col. 2, line 15 to page 2029, col. 1, line 28), where the JIT signaling agent is a processor, and where the SETUP signal initiates a cross-connect on the forward pass and the CONNECT signal, sent on the reverse pass, confirms the cross-connect was successful.

Regarding claim 18, Wei et al. disclose apparatus comprising: a communications interface for receiving a connection setup message sent from an upstream node before a cross-

connect at the upstream node is completed; and a processor for executing a cross-connect with a downstream node and for sending, through the communications interface, a connection setup message to the downstream node, whereby a cross-connect at the downstream node is initiated (page 2028, col. 2, line 15 to page 2029, col. 1, line 28), where the JIT signaling agent is a processor and communications interface.

Regarding claim 19, Wei et al. disclose apparatus as in claim 1, wherein the set-up message is sent from an intermediate node (figs. 4 and 5, which show sending the setup message downstream in advance of cross-connect completion for all nodes including the intermediate nodes).

Regarding claim 20, Wei et al. disclose the method as in claim 6, wherein the set-up message is sent from an intermediate node (figs. 4 and 5, which show sending the setup message downstream in advance of cross-connect completion for all nodes including the intermediate nodes).

Regarding claim 21, Wei et al. disclose the apparatus as in claim 9, wherein the set-up message is sent from an intermediate node (figs. 4 and 5, which show sending the setup message downstream in advance of cross-connect completion for all nodes including the intermediate nodes).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wei et al. ("Just-in-time signaling for WDM optical burst switching networks"; Wei et al.; Journal of Lightwave Technology, Vol. 18, Issue 12, Dec 2000, Pages 2019-2037) in view of Qiao et al. ("Just-Enough-Time (JET): a high speed protocol for bursty traffic in optical networks"; Qiao et al.; Technologies for a Global Information Infrastructure, 1997 Digest of the IEEE/LEOS Summer Topical Meetings, 11-15 Aug. 1997, Pages 26-27).

Regarding claims 8 and 16, Wei et al. disclose the method and apparatus according to claims 6 and 16, respectively, and disclose forward pass and reverse pass of signaling (page 2028, col. 2, line 15 to page 2029, col. 1, line 28). Wei et al. also discuss in-band signaling (page 2021, col. 2, lines 11-17 and page 2022, col. 1, lines 9-21), but do not elaborate on in-band signaling in their example of JIT signaling. Qiao et al. disclose an implementation of JIT signaling using in-band signaling (page 26, section 2, where the Qiao et al. system is not a WDM system and thus the signaling is inherently in-band, i.e. in the same wavelength). It would have been obvious to one of ordinary skill in the art at the time of the invention that the JIT system of Wei et al. could alternately function using in-band signaling, as taught by Qiao et al., in order to provide packet-switching-like JIT signaling, with the traffic burst durations and optical buffers optimally matched to avoid dropped bursts, to provide the advantage of the short setup time achievable when the control information travels on the same wavelength as the data (i.e. the signaling for one path not requiring setup time for multiple wavelengths).

Response to Arguments

7. Applicant's arguments with respect to claims 1, 3-7, 9-15 and 17-21 have been considered but are moot in view of the new ground(s) of rejection.

8. Applicant's arguments filed 25 April 2005 have been fully considered but they are not persuasive.

Regarding claims 8 and 16, the applicant states that "the Office Action admits, Wei et al. do not disclose or suggest such in-band signaling" (meaning in-band signaling used in order to initiate cross-connections). This is not an accurate statement. The statement from the Final Office Action, and from the above ground of rejection of claim 8, is "Wei et al. also discuss in-band signaling (page 2021, col. 2, lines 11-17 and page 2022, col. 1, lines 9-21), but do not elaborate on in-band signaling in their example of JIT signaling". Wei et al. are not silent on using in-band signaling in order to initiate cross-connections, Wei et al. simply do not use in-band signaling in their example of JIT signaling.

The applicant argues that the applicant cannot find any mention of in-band signaling as stated by the examiner, that Qiao et al. do not use the terms "in-band" or "out-of-band", and that Qiao et al. do not disclose the use of the same wavelength for the control (setup) signal and the data signal. However, as stated in the above grounds of rejection of claim 8, "Qiao et al. disclose an implementation of JIT signaling using in-band signaling (page 26, section 2, where the Qiao et al. system is not a WDM system and thus the signaling is inherently in-band, i.e. in the same wavelength)". Qiao et al. do not have to use the exact phrase "in-band" to disclose in-band signaling; the in-band signaling is inherent. The Qiao et al. system is an optical system but is not disclosed as a WDM system, and is disclosed as separating the setup signal and data signal in time. Qiao et al. state that the "data burst follows the control packet after an *offset-time, T"* (page 26, section 2). Considering these disclosures, the conclusion is that the Qiao et al. setup and data signals share the same wavelength, and are thus inherently "in-band".

The applicant also argues that the combination of Wei et al. and Qiao et al. is improper, specifically arguing that the combination would require "either (i) that Wei's principle of operation

be changed to a non-WDM system, or (ii) that Qiao's be changed to a WDM system". However, the combination does not require either of these conditions and the applicant does not provide any supporting evidence for these alleged requirements besides pointing out that Wei et al. discloses a WDM system with out-of-band signaling to enable cross-connections and that Qiao et al. discloses a non-WDM system.

First, Wei discloses the case of in-band signally where the packet header and data packets travel without any delay between them, but require buffers at each node for buffering the data while the header is being processed since the header and data are transmitted without delay between them (page 2021, col. 2). The WDM implementation of Wei uses out-of-band signaling, the use comprising separating control-signaling electronics from the transparent optical data path (page 2020, col. 1, lines 37-53). The difference between Wei's novel out-of-band approach and the conventional packet switching art has two parts; one, that the control signal electronics are separate from the transparent data path (page 2020, col. 1, lines 37-53) and two, that a buffer is only needed at the source node (page 2023, col. 1). Qiao discloses a non-WDM JIT implementation of using a delay between the control signal and the data signal. Since the Qiao system is not a WDM system, the control signal and data travel on the same wavelength inherently. Both Wei and Qiao teach a delay between the control signal and the data, and since Qiao's system is a single wavelength system, it would have been obvious to one of ordinary skill in the art at the time of the invention that the system of Wei could be implemented with in-band control signaling on each wavelength; in other words, applying the teaching of Qiao to each wavelength of Wei. Although this combination would result in the control signal electronics being associated with the same wavelength as the data, this combination would not render Wei unsatisfactory for its intended purpose of eliminating buffering at intermediate nodes and would provide the advantage of the short setup time

achievable when the control information travels on the same wavelength as the data (i.e. the signaling for one path not requiring setup time for multiple wavelengths). Applying Qiao et al. to each wavelength of Wei does not in any require Wei et al. to change to a non-WDM system.

Second, considering the specific combination of the rejection, and not any combination imagined by the applicant, the idea of the combination requiring the Qiao et al. system to be a WDM system does not even make sense; the idea of WDM for the Qiao et al. system is not even a consideration in applying the teaching Qiao et al. to Wei et al. in the combination of the rejection. Further, the principle of operation of Wei et al. is clearly the "Just-In-Time" signaling protocol that enables the data communication to arrive at the optical switch just as the switch has finished switching. The out-of-band signaling disclosed by Wei et al. is one feature of the Wei et al. implementation, and Wei et al. disclose some advantages of out-of-band signaling, but the "just in time" principle of operation does not depend on the out-of-band signaling. And with respect to control signaling as a protocol feature, modifying the control signaling of Wei et al. from out-of-band to in-band does not render control signaling in Wei et al. inoperable, nor does modifying this feature render the JIT protocol of Wei et al. inoperable. Further, the applicant states in the specification (page 3, lines 20-22), "(other than the inventive concept, path computation, connection setup, cross-connects, and signaling messages in support thereof, are known in the art and will not be described herein)". From this statement in the specification, it is reasonable to conclude that the applicant believes signaling to be known in the art.

Conclusion

9. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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